AN ESTIMATE OF THE MIGRATORY TIMING AND ABUNDANCE OF SOCKEYE SALMON INTO UPPER COOK INLET, ALASKA, IN 1997

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ABSTRACT

During the 1997 Upper Cook Inlet, Alaska commercial salmon fishing season a test fishery was used to estimate the timing of the sockeye salmon *Oncorhynchus nerka*, run as it passed a transect along the southern boundary of the management area. The test fishery operated from 1 July to 30 July and captured 2,245 sockeye salmon representing 1,655 CPUE points. Mean date of the run was 16 July, and the test fishery encompassed approximately 97% of the total run.

KEY WORDS: Salmon, *Oncorhynchus*, Upper Cook Inlet, Alaska, test fishery, migratory behavior

INTRODUCTION

In 1979 the Alaska Department of Fish and Game (ADF&G) began a test fishing project near the southern boundary of the Upper Cook Inlet (UCI) salmon management area (Figure1). The objective of this project was to estimate the total run of sockeye salmon *Oncorhynchus nerka,* to UCI before salmon reached commercial harvest areas. Such information has helped ADF&G management biologists set commercial fishing times and areas to harvest sockeye salmon surplus to spawning needs. Test fishing results have been reported annually since 1979 (Waltemyer 1983a, 1983b, 1986a, 1986b, Hilsinger and Waltemyer 1987, Hilsinger 1988, Tarbox and Waltemyer 1989, Tarbox 1990, 1992, 1994, 1995, 1996,1997). This report presents the results of the 1997 test fishing project.

METHODS

Test Fishing

Sockeye salmon returning to Upper Cook Inlet were sampled by fishing geographically fixed stations between Anchor Point and Red River Delta (Figure 1). Stations were numbered consecutively from east to west. Station locations were determined from LORAN C coordinates. A chartered test fishing vessel sampled stations 4 - 8 daily. To increase sampling power an additional station (6.5) was sampled every other day.

Sampling started on 1 July and continued through 30 July. The chartered vessel, *F/V Corrina Kay*, fished 366 m (1,200 ft) of 2.1 cm (5 1/8 in) multifilament gill net during test fishing. Drift gill net web had a filament size number of 53/S6F, was 45 meshes deep, and was constructed of double knot Super Crystal shade number 1.

All salmon captured were identified to species. All sockeye salmon were measured for length (mid-eye to fork-of-tail in mm). The number of each species caught at each station was expressed as a catch per unit of effort (CPUE) statistic:

$$CPUE_s = \frac{100 \text{ fm} \times 60 \text{ min} \times \text{number of fish}}{\text{fm of gear} \times \text{MFT}}, \quad (1)$$

where: $CPUE_s$ = CPUE for station s, and
MFT = mean fishing time.

Mean fishing time was calculated as:

$$MFT = (C - B) + \frac{[B - A] + [D - C]}{2}, \quad (2)$$

where: A = time net deployment started,
B = time net fully deployed,
C = time net retrieval started, and
D = time net fully retrieved.

Once deployed at a station, gill nets were fished 30 min before retrieval started.

Daily CPUE ($CPUE_d$) was calculated as:

$$CPUE_d = \sum_{s=1}^{n} CPUE_s \quad (3)$$

The following physical and chemical measurements were taken at the start of each set: air temperature, water temperature (at 1 m below the surface), wind velocity and direction, tide stage, water depth, and water clarity. Air and water temperatures were measured using a YSI salinity/temperature meter. Unfortunately, the salinity meter malfunctioned during the project. Wind speed was measured in knots and direction was recorded as 0 (no wind), 1 (north), 2 (northeast), 3 (east), 4 (southeast), 5 (south), 6 (southwest), 7 (west), or 8 (northwest). Tide stage was classed as flood, ebb or slack by observing the movement of the vessel while drifting with the gill net. Water depth was measured in fm using a Simrad echo sounder, and water clarity was measured in m using a 17.5 cm secchi disk.

Describing the Salmon Migration

Catchability, the fraction of the available population taken by a defined unit of fishing effort, was estimated as:

$$q_d = c_d/r_d, \quad (4)$$

where: q_d = estimated catchability on day d,
r_d = adjusted cumulative total return on day d, and
c_d = cumulative CPUE on day d.

Passage rate, the expansion factor used to convert CPUE into estimated numbers of salmon passing the test fishing transect, was calculated as:

$$PR = 1/q_d = \text{passage rate} \qquad (5)$$

Since the test fishery did not encompass the entire sockeye salmon run, the total CPUE for the test fishery was estimated after the season using the following relationship:

$$CPUE_t = CPUE_f \times \frac{H_t}{H_{(f+2)}} \quad , \qquad (6)$$

where: $CPUE_t$ = total estimated CPUE for the season,
$CPUE_f$ = cumulative CPUE through final day, f, of test fishing,
H_t = total commercial harvest for the season
$H_{(f+2)}$ = total commercial catch through final day of test fishery (f+2), and
2 = number of days it took salmon to travel from test fishery to commercial harvest areas.

Estimates of $CPUE_t$ and $CPUE_d$ values were used to estimate daily and cumulative proportions of $CPUE_t$, based on a non-linear model:

$$y_d = 1/(1 + e^{-(a+bd)}) \qquad (7)$$

where: y_d = cumulative proportion of CPUE or return on day d,
a and b = coefficients of model,
d = day of observation.

To calculate mean date of return, the following formula was used:

$$M = a/b \quad (8)$$

where: M = mean date of return.

RESULTS AND DISCUSSION

A total of 2,245 sockeye salmon, 203 pink salmon *O. gorbuscha*, 420 chum salmon *O. keta*, 502 coho salmon *O. kisutch*, and 4 chinook salmon *O. tshawytscha*, were captured during the 1997 test fishery (Table 1, Appendices A-D). Daily sockeye salmon catches ranged from 7 to 290 fish (Table 1).

Sockeye salmon daily CPUE values ranged from 7.4 on 13 July to 177.4 on 21 July. Cumulative total CPUE for the duration of the project was 1,655.8 (Table 1). Using post season commercial harvest figures, test fishing spanned approximately 97.1% of the total run. Therefore, total CPUE for the test fishery would have been 1,704.8 if test fishing had continued throughout the duration of the run.

Sockeye salmon catches along the transect were similar to the distribution of CPUE values (Tables 2 and 3).

Examination of daily and cumulative proportions (estimated post season) of the sockeye salmon run to UCI suggested that 7.3% of the run had passed the transect prior to the start of test fishing on 1 July and that the run was 89.8% completed at project termination (Appendix E; Figure 2). The mean date of the run was 16 July, which was one day late relative to the historic average (Table 4).

The total sockeye salmon run to UCI in 1997 was estimated to be 6.3 million fish of which 4.18 million were harvested in the commercial fishery (Table 5). Estimated passage rate for the season was 3,695 sockeye salmon per CPUE index point.

Water temperatures measured along the transect were relatively warm (9-10° C) early in July and then warmed to a high of 12.0°C toward to the end of July (Appendix F). Air temperatures fluctuated between 13°C and 17°C during the project (Appendix F). Wind velocities were generally low to moderate. However, winds of 20 knots or greater were recorded on eight days (Appendix F). Wind direction was variable.

During the commercial salmon fishing season five estimates of the sockeye salmon total run were made (Appendix G). Passage rates varied from approximately 2,900 sockeye salmon/index point

prior to 14 July to 3,741 sockeye salmon/index point on 21 July. Estimates of run strength were made at critical points in the fishery. Historically, early run estimates are high. This pattern was true for the 1997 season. Early estimates indicated a return of 12 million sockeye salmon. However, estimates used for management early in the season were based on a bias corrected return estimate of 5.4 million sockeye salmon. At the mid-point of the return the estimates tended to cluster around 5-7 million sockeye salmon. By 21 July the estimate of 6.6 sockeye salmon was very close to the actual total return of 6.3 million sockeye salmon.

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Table 1. Summary of sockeye salmon fishing effort, daily and cumulative catch, and daily and cumulative CPUE, Upper Cook Inlet offshore test fish project, 1997.

Date	Number of Stations	Mean Fishing Time (min)	Catch		CPUE		Mean Length (mm)
			Daily	Cumul.	Daily	Cumul.	
01-Jul	6	232.0	55	55	41.7	41.7	558
02-Jul	5	185.5	34	89	26.0	67.7	550
03-Jul	6	230.0	78	167	58.8	126.5	559
04-Jul	5	181.5	28	195	22.9	149.4	544
05-Jul	6	227.5	39	234	30.2	179.6	548
06-Jul	5	185.0	105	339	76.9	256.5	556
07-Jul	6	218.5	40	379	32.8	289.3	531
08-Jul	5	183.5	32	411	26.0	315.3	570
09-Jul	5	195.5	157	568	112.4	427.7	563
10-Jul	5	196.5	143	711	101.4	529.1	566
11-Jul	6	231.0	94	805	71.3	600.3	561
12-Jul	5	192.0	83	888	60.7	661.1	550
13-Jul	6	216.0	9	897	7.4	668.4	549
14-Jul	5	189.0	88	985	61.1	729.6	562
15-Jul	6	202.5	50	1035	47.1	776.7	573
16-Jul	5	181.5	38	1073	31.2	807.9	574
17-Jul	6	226.0	61	1134	45.4	853.3	558
18-Jul	5	180.0	11	1145	9.1	862.3	559
19-Jul	6	222.0	68	1213	53.1	915.4	574
20-Jul	5	182.5	13	1226	10.5	925.9	553
21-Jul	6	243.5	262	1488	177.4	1103.3	567
22-Jul	5	191.0	64	1552	48.9	1152.2	544
23-Jul	6	218.5	116	1668	83.3	1235.4	562
24-Jul	5	187.0	80	1748	60.5	1296.0	568
25-Jul	6	227.0	55	1803	40.6	1336.6	558
26-Jul	5	208.5	140	1943	89.7	1426.3	547
27-Jul	6	224.5	93	2036	72.4	1498.8	564
28-Jul	5	178.0	42	2078	32.0	1530.8	554
29-Jul	6	231.0	111	2189	84.6	1615.3	556
30-Jul	5	188.0	56	2245	40.5	1655.8	534

Table 2. Estimated sockeye salmon catch by date and station, Upper Cook Inlet offshore test fish project, 1997.

	Station Number						
Date	4	5	6	6.5	7	8	Total
01-Jul	9	14	6	22	4	0	55
02-Jul	2	21	0		7	4	34
03-Jul	39	24	7	1	5	2	78
04-Jul	0	14	12		2	0	28
05-Jul	0	1	7	20	9	2	39
06-Jul	0	18	86		1	0	105
07-Jul	1	19	15	2	2	1	40
08-Jul	7	0	2		20	3	32
09-Jul	21	98	37	1	0		157
10-Jul	21	35	82		4	1	143
11-Jul	3	14	24	19	29	5	94
12-Jul	6	49	6		21	1	83
13-Jul	0	6	0	2	1	0	9
14-Jul	0	5	1		80	2	88
15-Jul	3	19	9	17	2	0	50
16-Jul	10	11	12		5	0	38
17-Jul	3	3	4	4	22	25	61
18-Jul	1	7	2		1	0	11
19-Jul	2	10	1	23	32	0	68
20-Jul	0	1	4		0	8	13
21-Jul	3	9	106	9	47	88	262
22-Jul	0	7	7		42	8	64
23-Jul	0	0	83	4	1	28	116
24-Jul	0	13	56		3	8	80
25-Jul	1	31	21	1	1	0	55
26-Jul	0	2	8		100	30	140
27-Jul	0	0	8	25	19	41	93
28-Jul	0	0	31		5	6	42
29-Jul	2	6	44	34	14	11	111
30-Jul	2	42	5		5	2	56
Total	136	479	686	184	484	276	2245
%	6.1	21.3	30.6	8.2	21.6	12.3	100.0

Table 3. Estimated sockeye salmon CPUE by date and station, Upper Cook Inlet offshore test fish project, 1997.

	Station Number						
Date	4	5	6	6.5	7	8	Total
01-Jul	7.0	11.0	4.8	15.9	3.0	0.0	41.7
02-Jul	1.7	15.4	0.0		5.5	3.4	26.0
03-Jul	28.6	18.2	5.7	0.8	3.9	1.6	58.8
04-Jul	0.0	11.5	9.7		1.7	0.0	22.9
05-Jul	0.0	0.8	5.4	15.2	7.3	1.5	30.2
06-Jul	0.0	14.6	61.4		0.9	0.0	76.9
07-Jul	0.8	15.0	12.2	2.3	1.7	0.8	32.8
08-Jul	5.7	0.0	1.6		16.2	2.5	26.0
09-Jul	17.0	66.0	28.4	0.8	0.0		112.4
10-Jul	16.4	26.2	54.7		3.2	0.8	101.4
11-Jul	2.5	11.0	18.0	15.0	20.7	4.1	71.3
12-Jul	4.8	33.8	4.9		16.4	0.8	60.7
13-Jul	0.0	4.9	0.0	1.6	0.9	0.0	7.4
14-Jul	0.0	4.1	0.8		54.6	1.6	61.1
15-Jul	2.5	15.0	14.2	13.8	1.7	0.0	47.1
16-Jul	8.0	9.2	9.9		4.2	0.0	31.2
17-Jul	2.6	2.5	3.3	3.1	16.7	17.2	45.4
18-Jul	0.8	5.7	1.6		0.8	0.0	9.1
19-Jul	1.7	8.1	0.8	18.1	24.3	0.0	53.1
20-Jul	0.0	0.8	3.2		0.0	6.4	10.5
21-Jul	2.4	7.3	67.6	7.4	35.2	57.4	177.4
22-Jul	0.0	5.4	5.5		31.5	6.4	48.9
23-Jul	0.0	0.0	57.9	3.3	0.8	21.3	83.3
24-Jul	0.0	10.4	41.0		2.5	6.7	60.5
25-Jul	0.8	23.0	15.2	0.8	0.8	0.0	40.6
26-Jul	0.0	1.6	6.5		59.4	22.2	89.7
27-Jul	0.0	0.0	6.5	19.2	15.2	31.5	72.4
28-Jul	0.0	0.0	23.2		3.9	4.8	32.0
29-Jul	1.6	4.8	32.6	25.8	11.2	8.6	84.6
30-Jul	1.7	29.7	4.2		4.1	0.8	40.5
Total	106.6	356.1	501.2	143.2	348.2	200.5	1655.8
%	6.4	21.5	30.3	8.6	21.0	12.1	100.0

Table 4. Mean date of the sockeye salmon run across Anchor Point transect, Upper Cook Inlet offshore test fish project, 1979-1997.

Year	MeanDate[a] Coded	Calendar
1979	18.4	July 11
1980	22.7	July 15
1981	13.2	July 06
1982	24.2	July 17
1983	22.6	July 15
1984	18.4	July 11
1985	22.7	July 15
1986	23.0	July 16
1987	25.7	July 18
1988	20.6	July 13
1989	21.6	July 14
1990	25.6	July 18
1991	24.3	July 17
1992	24.3	July 17
1993	21.4	July 14
1994	26.2	July 19
1995	22.1	July 15
1996	20.4	July 13
1997	23.6	July 16
1979-1996	22.0	July 15

[a] Day (1) = June 24. File: otf97t4.doc

Table 5. The 1997 Upper Cook Inlet commercial salmon harvest.

Day	Harvest	Culumative Harvest	Culumative Percent
602	936	936	0.02
604	698	1634	0.04
606	205	1839	0.04
609	623	2462	0.06
611	687	3149	0.08
613	7	3156	0.08
618	83	3239	0.08
623	689	3928	0.09
627	74479	78407	1.88
630	109181	187588	4.49
702	35279	222867	5.34
704	123396	346263	8.29
705	20079	366342	8.77
707	130019	496361	11.88
708	35070	531431	12.72
709	74022	605453	14.5
710	264349	869802	20.83
711	220926	1090728	26.11
713	411345	1502073	35.96
714	395831	1897904	45.44
715	6138	1904042	45.59
717	206374	2110416	50.53
718	187086	2297502	55.01
719	250837	2548339	61.01
720	224316	2772655	66.38
721	130533	2903188	69.51
723	228860	3132048	74.99
724	171054	3303102	79.08
725	202419	3505521	83.93
726	56646	3562167	85.29
727	90900	3653067	87.46
728	85808	3738875	89.52
729	76816	3815691	91.36
730	65197	3880888	92.92
731	55327	3936215	94.24
801	120256	4056471	97.12
802	26702	4083173	97.76
803	29713	4112886	98.47
804	63810	4176696	100

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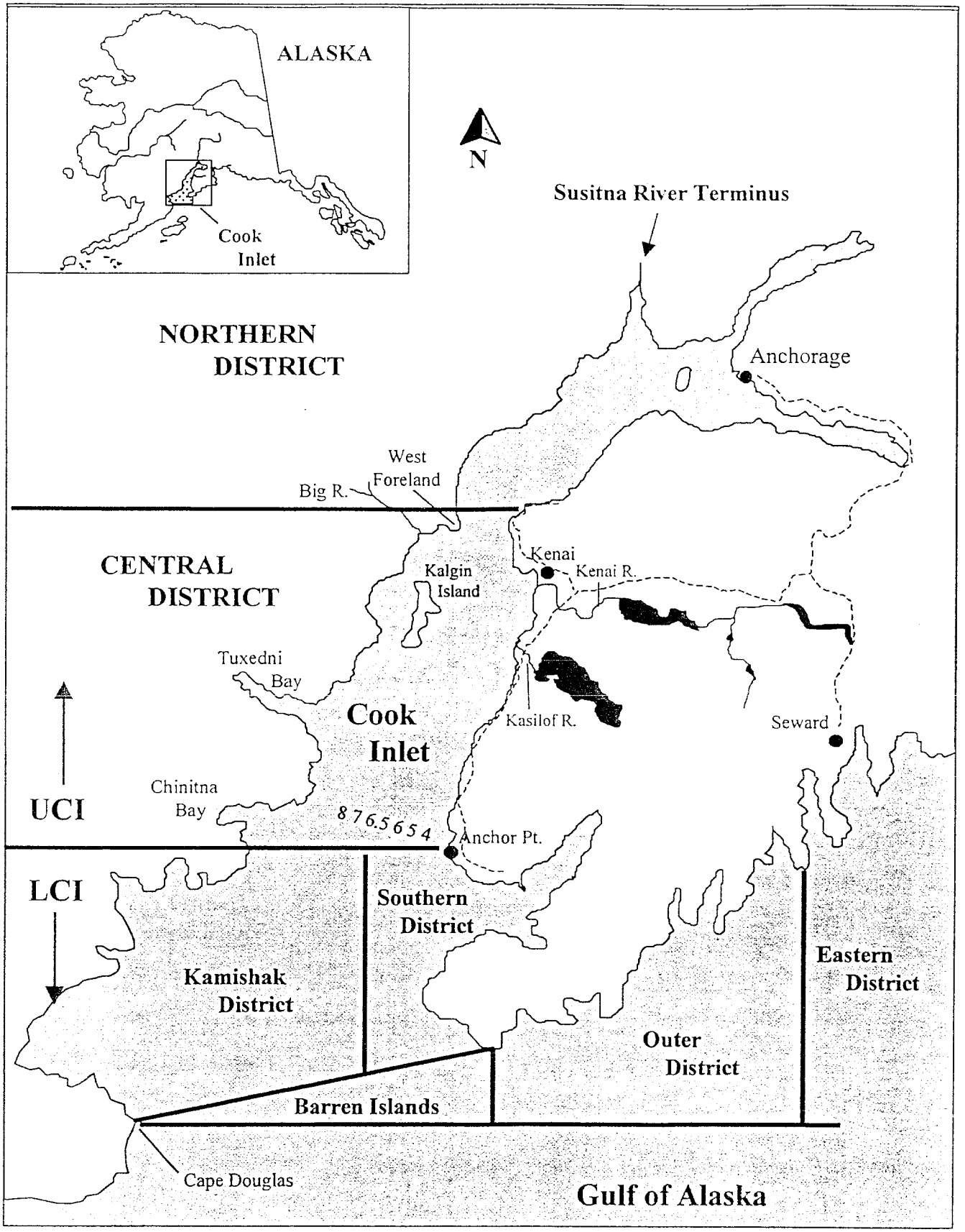

Figure 1. Location of fishing districts and offshore test fish transect in Cook Inlet, Alaska, 1997..

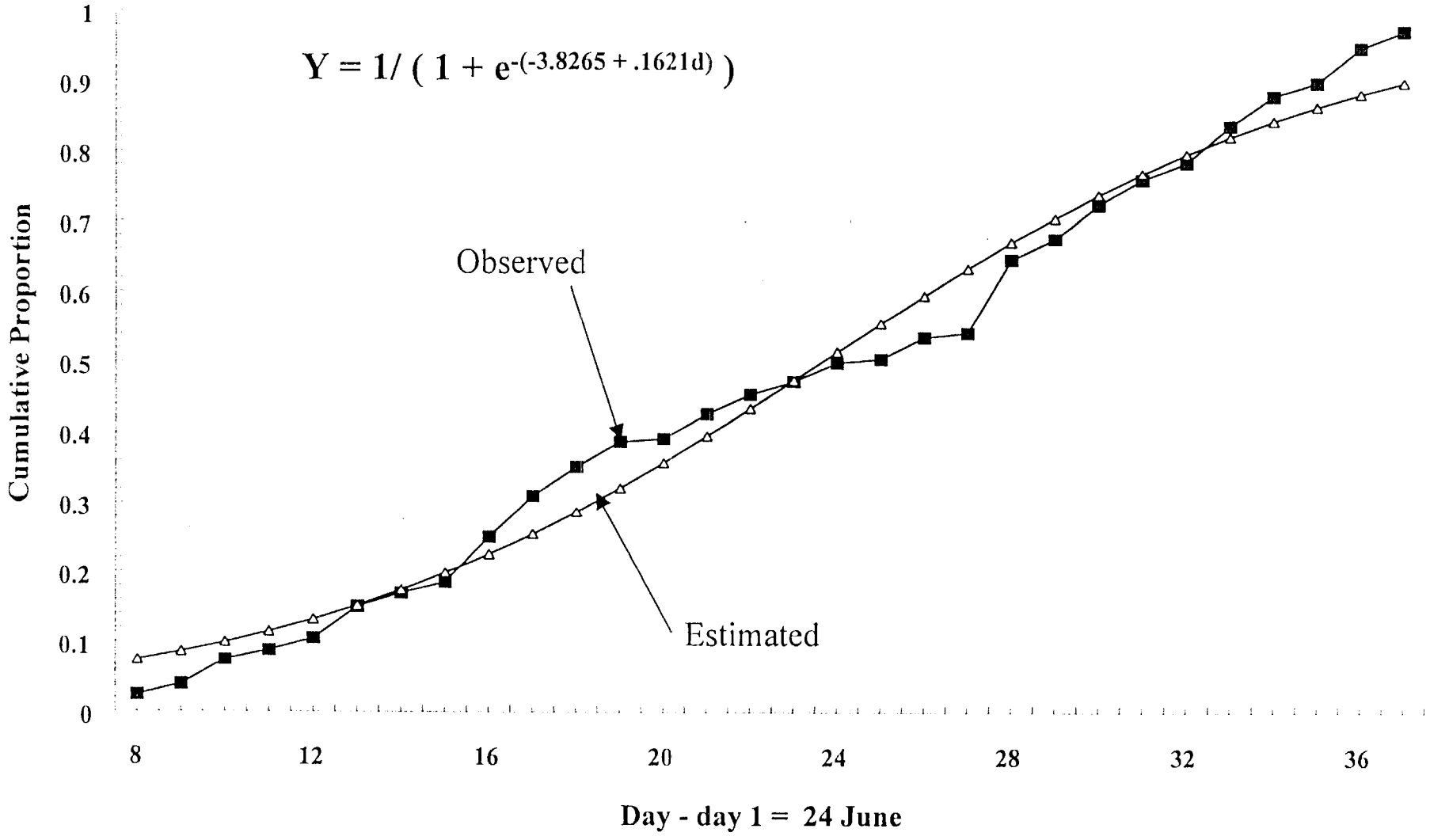

Figure 2. Cumulative proportions estimated for the sockeye salmon return to Upper Cook Inlet, Alaska, 1997.

Appendix A1. Summary of pink salmon fishing effort, daily and cumulative catch, and daily and cumulative CPUE, Upper Cook Inlet offshore test fish project, 1997.

Date	Number of Stations	Mean Fishing Time (min)	Catch		CPUE	
			Daily	Cumul.	Daily	Cumul.
01-Jul	6	232.0	2	2	1.5	1.5
02-Jul	5	185.5	5	7	3.9	5.4
03-Jul	6	230.0	0	7	0.0	5.4
04-Jul	5	181.5	2	9	1.7	7.1
05-Jul	6	227.5	2	11	1.6	8.7
06-Jul	5	185.0	5	16	3.9	12.6
07-Jul	6	218.5	5	21	4.2	16.8
08-Jul	5	183.5	7	28	5.6	22.4
09-Jul	5	195.5	6	34	4.9	27.3
10-Jul	5	196.5	5	39	3.7	31.0
11-Jul	6	231.0	13	52	10.0	40.9
12-Jul	5	192.0	19	71	14.6	55.5
13-Jul	6	216.0	2	73	1.7	57.2
14-Jul	5	189.0	4	77	3.0	60.2
15-Jul	6	202.5	0	77	0.0	60.2
16-Jul	5	181.5	6	83	4.9	65.1
17-Jul	6	226.0	13	96	9.9	75.0
18-Jul	5	180.0	5	101	4.1	79.1
19-Jul	6	222.0	7	108	5.7	84.8
20-Jul	5	182.5	3	111	2.5	87.3
21-Jul	6	243.5	20	131	14.3	101.6
22-Jul	5	191.0	9	140	7.0	108.6
23-Jul	6	218.5	14	154	10.4	118.9
24-Jul	5	187.0	9	163	7.9	126.8
25-Jul	6	227.0	13	176	10.6	137.5
26-Jul	5	208.5	13	189	9.0	146.4
27-Jul	6	224.5	0	189	0.0	146.4
28-Jul	5	178.0	7	196	5.9	152.4
29-Jul	6	231.0	6	202	4.6	157.0
30-Jul	5	188.0	1	203	0.7	157.7

Appendix A2. Estimated pink salmon catch by date and station, Upper Cook Inlet offshore test fish project, 1997.

	Station Number						
Date	4	5	6	6.5	7	8	Total
01-Jul	0	1	0	0	1	0	2
02-Jul	1	1	1		2	0	5
03-Jul	0	0	0	0	0	0	0
04-Jul	0	1	0		0	1	2
05-Jul	0	0	0	0	2	0	2
06-Jul	0	0	3		2	0	5
07-Jul	0	0	0	0	3	2	5
08-Jul	1	2	3		0	1	7
09-Jul	1	0	1	2	2		6
10-Jul	2	1	2		0	0	5
11-Jul	1	2	2	2	4	2	13
12-Jul	1	7	2		4	5	19
13-Jul	0	0	0	0	1	1	2
14-Jul	0	0	1		2	1	4
15-Jul	0	0	0	0	0	0	0
16-Jul	2	1	0		3	0	6
17-Jul	1	0	0	1	4	7	13
18-Jul	2	1	2		0	0	5
19-Jul	2	2	1	0	2	0	7
20-Jul	0	1	0		1	1	3
21-Jul	2	1	3	1	7	6	20
22-Jul	0	5	0		2	2	9
23-Jul	1	0	7	0	2	4	14
24-Jul	1	0	4		2	2	9
25-Jul	7	0	2	2	2	0	13
26-Jul	2	2	2		7	0	13
27-Jul	0	0	0	0	0	0	0
28-Jul	0	0	2		1	4	7
29-Jul	0	0	2	2	2	0	6
30-Jul	0	1	0		0	0	1
Total	27	29	40	10	58	39	203
%	13.3	14.3	19.7	4.9	28.6	19.2	100.0

Appendix A3. Estimated pink salmon CPUE by date and station, Upper Cook Inlet offshore test fish project, 1997.

	Station Number						
Date	4	5	6	6.5	7	8	Total
01-Jul	0.0	0.8	0.0	0.0	0.7	0.0	1.5
02-Jul	0.8	0.7	0.8		1.6	0.0	3.9
03-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
04-Jul	0.0	0.8	0.0		0.0	0.8	1.7
05-Jul	0.0	0.0	0.0	0.0	1.6	0.0	1.6
06-Jul	0.0	0.0	2.1		1.7	0.0	3.9
07-Jul	0.0	0.0	0.0	0.0	2.6	1.6	4.2
08-Jul	0.8	1.5	2.4		0.0	0.8	5.6
09-Jul	0.8	0.0	0.8	1.6	1.6		4.9
10-Jul	1.6	0.7	1.3		0.0	0.0	3.7
11-Jul	0.8	1.6	1.5	1.6	2.9	1.6	10.0
12-Jul	0.8	4.8	1.6		3.1	4.2	14.6
13-Jul	0.0	0.0	0.0	0.0	0.9	0.8	1.7
14-Jul	0.0	0.0	0.8		1.4	0.8	3.0
15-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16-Jul	1.6	0.8	0.0		2.5	0.0	4.9
17-Jul	0.9	0.0	0.0	0.8	3.0	5.2	9.9
18-Jul	1.6	0.8	1.6		0.0	0.0	4.1
19-Jul	1.7	1.6	0.8	0.0	1.5	0.0	5.7
20-Jul	0.0	0.8	0.0		0.8	0.8	2.5
21-Jul	1.6	0.8	1.9	0.8	5.2	3.9	14.3
22-Jul	0.0	3.9	0.0		1.5	1.6	7.0
23-Jul	0.8	0.0	4.9	0.0	1.6	3.0	10.4
24-Jul	0.8	0.0	2.9		1.6	2.5	7.9
25-Jul	5.9	0.0	1.4	1.6	1.6	0.0	10.6
26-Jul	1.6	1.6	1.6		4.1	0.0	9.0
27-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28-Jul	0.0	0.0	1.9		0.8	3.2	5.9
29-Jul	0.0	0.0	1.5	1.5	1.6	0.0	4.6
30-Jul	0.0	0.7	0.0		0.0	0.0	0.7
Total	22.3	22.1	30.1	8.0	44.2	31.0	157.7
%	14.1	14.0	19.1	5.1	28.0	19.7	100.0

Appendix B1. Summary of chum salmon fishing effort, daily and cumulative catch, and daily and cumulative CPUE, Upper Cook Inlet offshore test fish project, 1997.

Date	Number of Stations	Mean Fishing Time (min)	Catch		CPUE	
			Daily	Cumul.	Daily	Cumul.
01-Jul	6	232.0	0	0	0.0	0.0
02-Jul	5	185.5	1	1	0.7	0.7
03-Jul	6	230.0	1	2	0.7	1.4
04-Jul	5	181.5	1	3	0.8	2.2
05-Jul	6	227.5	0	3	0.0	2.2
06-Jul	5	185.0	2	5	1.4	3.6
07-Jul	6	218.5	2	7	1.6	5.3
08-Jul	5	183.5	0	7	0.0	5.3
09-Jul	5	195.5	2	9	0.6	5.9
10-Jul	5	196.5	4	13	2.7	8.7
11-Jul	6	231.0	12	25	9.1	17.8
12-Jul	5	192.0	4	29	2.9	20.7
13-Jul	6	216.0	1	30	0.8	21.5
14-Jul	5	189.0	1	31	0.7	22.2
15-Jul	6	202.5	3	34	2.5	24.7
16-Jul	5	181.5	1	35	0.8	25.5
17-Jul	6	226.0	26	61	19.8	45.3
18-Jul	5	180.0	6	67	4.9	50.2
19-Jul	6	222.0	16	83	12.8	63.1
20-Jul	5	182.5	8	91	6.5	69.5
21-Jul	6	243.5	83	174	55.1	124.6
22-Jul	5	191.0	44	218	34.1	158.8
23-Jul	6	218.5	19	237	13.4	172.2
24-Jul	5	187.0	24	261	19.2	191.4
25-Jul	6	227.0	28	289	20.5	211.9
26-Jul	5	208.5	64	353	41.0	252.9
27-Jul	6	224.5	11	364	8.6	261.5
28-Jul	5	178.0	20	384	18.0	279.5
29-Jul	6	231.0	15	399	11.4	290.8
30-Jul	5	188.0	21	420	14.8	305.7

Appendix B2. Estimated chum salmon catch by date and station, Upper Cook Inlet offshore test fish project, 1997.

	Station Number						
Date	4	5	6	6.5	7	8	Total
01-Jul	0	0	0	0	0	0	0
02-Jul	0	1	0		0	0	1
03-Jul	1	0	0	0	0	0	1
04-Jul	0	1	0		0	0	1
05-Jul	0	0	0	0	0	0	0
06-Jul	0	0	2		0	0	2
07-Jul	0	0	1	0	0	1	2
08-Jul	0	0	0		0	0	0
09-Jul	2	0	0	0	0		2
10-Jul	0	1	3		0	0	4
11-Jul	1	1	8	1	1	0	12
12-Jul	0	2	0		2	0	4
13-Jul	0	0	1	0	0	0	1
14-Jul	0	0	0		1	0	1
15-Jul	1	1	0	0	1	0	3
16-Jul	0	0	0		1	0	1
17-Jul	0	1	0	1	19	5	26
18-Jul	3	1	1		1	0	6
19-Jul	0	12	1	0	3	0	16
20-Jul	0	0	7		0	1	8
21-Jul	1	1	49	1	12	19	83
22-Jul	0	10	18		13	3	44
23-Jul	0	0	17	1	0	1	19
24-Jul	3	20	1		0	0	24
25-Jul	0	8	19	0	0	1	28
26-Jul	0	2	9		49	4	64
27-Jul	0	0	2	7	1	1	11
28-Jul	0	0	13		7	0	20
29-Jul	1	0	6	7	1	0	15
30-Jul	0	21	0		0	0	21
Total	13	83	158	18	112	36	420
%	3.1	19.8	37.6	4.3	26.7	8.6	100.0

Appendix B3. Estimated chum salmon CPUE by date and station, Upper Cook Inlet offshore test fish project, 1997.

	Station Number						
Date	4	5	6	6.5	7	8	Total
01-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
02-Jul	0.0	0.7	0.0		0.0	0.0	0.7
03-Jul	0.7	0.0	0.0	0.0	0.0	0.0	0.7
04-Jul	0.0	0.8	0.0		0.0	0.0	0.8
05-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
06-Jul	0.0	0.0	1.4		0.0	0.0	1.4
07-Jul	0.0	0.0	0.8	0.0	0.0	0.8	1.6
08-Jul	0.0	0.0	0.0		0.0	0.0	0.0
09-Jul	0.6	0.0	0.0	0.0	0.0		0.6
10-Jul	0.0	0.7	2.0		0.0	0.0	2.7
11-Jul	0.8	0.8	6.0	0.8	0.7	0.0	9.1
12-Jul	0.0	1.4	0.0		1.6	0.0	2.9
13-Jul	0.0	0.0	0.8	0.0	0.0	0.0	0.8
14-Jul	0.0	0.0	0.0		0.7	0.0	0.7
15-Jul	0.8	0.8	0.0	0.0	0.8	0.0	2.5
16-Jul	0.0	0.0	0.0		0.8	0.0	0.8
17-Jul	0.0	0.8	0.0	0.8	14.4	3.7	19.8
18-Jul	2.5	0.8	0.8		0.8	0.0	4.9
19-Jul	0.0	9.7	0.8	0.0	2.3	0.0	12.8
20-Jul	0.0	0.0	5.7		0.0	0.8	6.5
21-Jul	0.8	0.8	31.3	0.8	9.0	12.4	55.1
22-Jul	0.0	7.8	14.2		9.7	2.4	34.1
23-Jul	0.0	0.0	11.9	0.8	0.0	0.8	13.4
24-Jul	2.5	16.0	0.7		0.0	0.0	19.2
25-Jul	0.0	5.9	13.7	0.0	0.0	0.8	20.5
26-Jul	0.0	1.6	7.3		29.1	3.0	41.0
27-Jul	0.0	0.0	1.6	5.4	0.8	0.8	8.6
28-Jul	0.0	0.0	12.5		5.5	0.0	18.0
29-Jul	0.8	0.0	4.4	5.3	0.8	0.0	11.4
30-Jul	0.0	14.8	0.0		0.0	0.0	14.8
Total	9.6	63.5	116.1	13.9	77.1	25.5	305.7
%	3.1	20.8	38.0	4.5	25.2	8.3	100.0

Appendix C1. Summary of coho salmon fishing effort, daily and cumulative catch, and daily and cumulative CPUE, Upper Cook Inlet offshore test fish project, 1997.

Date	Number of Stations	Mean Fishing Time (min)	Catch		CPUE	
			Daily	Cumul.	Daily	Cumul.
01-Jul	6	232.0	0	0	0.0	0.0
02-Jul	5	185.5	0	0	0.0	0.0
03-Jul	6	230.0	0	0	0.0	0.0
04-Jul	5	181.5	0	0	0.0	0.0
05-Jul	6	227.5	0	0	0.0	0.0
06-Jul	5	185.0	0	0	0.0	0.0
07-Jul	6	218.5	2	2	2.0	2.0
08-Jul	5	183.5	0	2	0.0	2.0
09-Jul	5	195.5	5	7	4.0	6.0
10-Jul	5	196.5	2	9	1.3	7.3
11-Jul	6	231.0	14	23	10.5	17.8
12-Jul	5	192.0	11	34	8.5	26.3
13-Jul	6	216.0	4	38	3.3	29.6
14-Jul	5	189.0	8	46	6.0	35.6
15-Jul	6	202.5	8	54	7.3	42.9
16-Jul	5	181.5	0	54	0.0	42.9
17-Jul	6	226.0	18	72	13.9	56.8
18-Jul	5	180.0	8	80	6.6	63.4
19-Jul	6	222.0	5	85	3.8	67.2
20-Jul	5	182.5	2	87	1.6	68.8
21-Jul	6	243.5	52	139	35.1	103.9
22-Jul	5	191.0	31	170	23.8	127.7
23-Jul	6	218.5	14	184	9.9	137.6
24-Jul	5	187.0	15	199	11.6	149.3
25-Jul	6	227.0	46	245	33.4	182.7
26-Jul	5	208.5	136	381	92.6	275.3
27-Jul	6	224.5	11	392	8.6	283.9
28-Jul	5	178.0	47	439	42.6	326.5
29-Jul	6	231.0	46	485	35.8	362.3
30-Jul	5	188.0	17	502	12.5	374.8

Appendix C2. Estimated coho salmon catch by date and station, Upper Cook Inlet offshore test fish project, 1997.

	Station Number						
Date	4	5	6	6.5	7	8	Total
01-Jul	0	0	0	0	0	0	0
02-Jul	0	0	0		0	0	0
03-Jul	0	0	0	0	0	0	0
04-Jul	0	0	0		0	0	0
05-Jul	0	0	0	0	0	0	0
06-Jul	0	0	0		0	0	0
07-Jul	0	0	0	1	0	1	2
08-Jul	0	0	0		0	0	0
09-Jul	2	0	1	1	1		5
10-Jul	0	0	2		0	0	2
11-Jul	0	4	2	0	7	1	14
12-Jul	0	2	1		6	2	11
13-Jul	0	1	2	1	0	0	4
14-Jul	0	2	0		5	1	8
15-Jul	2	2	1	2	1	0	8
16-Jul	0	0	0		0	0	0
17-Jul	1	2	1	1	5	8	18
18-Jul	0	3	4		1	0	8
19-Jul	0	0	0	1	4	0	5
20-Jul	0	0	2		0	0	2
21-Jul	1	2	11	0	9	29	52
22-Jul	0	5	7		16	3	31
23-Jul	0	0	13	0	1	0	14
24-Jul	0	1	8		0	6	15
25-Jul	0	3	42	0	1	0	46
26-Jul	0	24	20		72	20	136
27-Jul	0	0	0	4	6	1	11
28-Jul	3	5	20		11	8	47
29-Jul	2	9	6	12	8	9	46
30-Jul	1	13	0		3	0	17
Total	12	78	143	23	157	89	502
%	2.4	15.5	28.5	4.6	31.3	17.7	100.0

Appendix C3. Estimated coho salmon CPUE by date and station, Upper Cook Inlet offshore test fish project, 1997.

	Station Number						
Date	4	5	6	6.5	7	8	Total
01-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
02-Jul	0.0	0.0	0.0		0.0	0.0	0.0
03-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
04-Jul	0.0	0.0	0.0		0.0	0.0	0.0
05-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
06-Jul	0.0	0.0	0.0		0.0	0.0	0.0
07-Jul	0.0	0.0	0.0	1.2	0.0	0.8	2.0
08-Jul	0.0	0.0	0.0		0.0	0.0	0.0
09-Jul	1.6	0.0	0.8	0.8	0.8		4.0
10-Jul	0.0	0.0	1.3		0.0	0.0	1.3
11-Jul	0.0	3.2	1.5	0.0	5.0	0.8	10.5
12-Jul	0.0	1.4	0.8		4.7	1.7	8.5
13-Jul	0.0	0.8	1.6	0.8	0.0	0.0	3.3
14-Jul	0.0	1.6	0.0		3.5	0.8	6.0
15-Jul	1.7	1.6	1.6	1.6	0.8	0.0	7.3
16-Jul	0.0	0.0	0.0		0.0	0.0	0.0
17-Jul	0.9	1.6	0.8	0.8	3.8	6.0	13.9
18-Jul	0.0	2.5	3.3		0.8	0.0	6.6
19-Jul	0.0	0.0	0.0	0.8	3.0	0.0	3.8
20-Jul	0.0	0.0	1.6		0.0	0.0	1.6
21-Jul	0.8	1.6	7.0	0.0	6.7	18.9	35.1
22-Jul	0.0	3.9	5.5		12.0	2.4	23.8
23-Jul	0.0	0.0	9.1	0.0	0.8	0.0	9.9
24-Jul	0.0	0.8	5.8		0.0	5.0	11.6
25-Jul	0.0	2.2	30.4	0.0	0.8	0.0	33.4
26-Jul	0.0	18.7	16.3		42.8	14.8	92.6
27-Jul	0.0	0.0	0.0	3.1	4.8	0.8	8.6
28-Jul	2.5	5.7	19.4		8.7	6.4	42.6
29-Jul	1.6	7.2	4.4	9.1	6.4	7.0	35.8
30-Jul	0.8	9.2	0.0		2.5	0.0	12.5
Total	9.9	61.9	111.3	18.2	108.0	65.4	374.8
%	2.6	16.5	29.7	4.8	28.8	17.5	100.0

Appendix D1. Summary of chinook salmon fishing effort, daily and cumulative catch, and daily and cumulative CPUE, Upper Cook Inlet offshore test fish project, 1997.

Date	Number of Stations	Mean Fishing Time (min)	Catch		CPUE	
			Daily	Cumul.	Daily	Cumul.
01-Jul	6	232.0	0	0	0.0	0.0
02-Jul	5	185.5	0	0	0.0	0.0
03-Jul	6	230.0	0	0	0.0	0.0
04-Jul	5	181.5	0	0	0.0	0.0
05-Jul	6	227.5	1	1	0.7	0.7
06-Jul	5	185.0	0	1	0.0	0.7
07-Jul	6	218.5	0	1	0.0	0.7
08-Jul	5	183.5	0	1	0.0	0.7
09-Jul	5	195.5	1	2	0.8	1.6
10-Jul	5	196.5	0	2	0.0	1.6
11-Jul	6	231.0	0	2	0.0	1.6
12-Jul	5	192.0	0	2	0.0	1.6
13-Jul	6	216.0	0	2	0.0	1.6
14-Jul	5	189.0	0	2	0.0	1.6
15-Jul	6	202.5	1	3	0.8	2.4
16-Jul	5	181.5	0	3	0.0	2.4
17-Jul	6	226.0	0	3	0.0	2.4
18-Jul	5	180.0	0	3	0.0	2.4
19-Jul	6	222.0	0	3	0.0	2.4
20-Jul	5	182.5	0	3	0.0	2.4
21-Jul	6	243.5	0	3	0.0	2.4
22-Jul	5	191.0	0	3	0.0	2.4
23-Jul	6	218.5	0	3	0.0	2.4
24-Jul	5	187.0	0	3	0.0	2.4
25-Jul	6	227.0	1	4	0.8	3.2
26-Jul	5	208.5	0	4	0.0	3.2
27-Jul	6	224.5	0	4	0.0	3.2
28-Jul	5	178.0	0	4	0.0	3.2
29-Jul	6	231.0	0	4	0.0	3.2
30-Jul	5	188.0	0	4	0.0	3.2

Appendix D2. Estimated chinook salmon catch by date and station, Upper Cook Inlet offshore test fish project, 1997.

	Station Number						
Date	4	5	6	6.5	7	8	Total
01-Jul	0	0	0	0	0	0	0
02-Jul	0	0	0		0	0	0
03-Jul	0	0	0	0	0	0	0
04-Jul	0	0	0		0	0	0
05-Jul	0	0	1	0	0	0	1
06-Jul	0	0	0		0	0	0
07-Jul	0	0	0	0	0	0	0
08-Jul	0	0	0		0	0	0
09-Jul	0	0	0	0	1		1
10-Jul	0	0	0		0	0	0
11-Jul	0	0	0	0	0	0	0
12-Jul	0	0	0		0	0	0
13-Jul	0	0	0	0	0	0	0
14-Jul	0	0	0		0	0	0
15-Jul	0	0	0	1	0	0	1
16-Jul	0	0	0		0	0	0
17-Jul	0	0	0	0	0	0	0
18-Jul	0	0	0		0	0	0
19-Jul	0	0	0	0	0	0	0
20-Jul	0	0	0		0	0	0
21-Jul	0	0	0	0	0	0	0
22-Jul	0	0	0		0	0	0
23-Jul	0	0	0	0	0	0	0
24-Jul	0	0	0		0	0	0
25-Jul	0	0	0	0	1	0	1
26-Jul	0	0	0		0	0	0
27-Jul	0	0	0	0	0	0	0
28-Jul	0	0	0		0	0	0
29-Jul	0	0	0	0	0	0	0
30-Jul	0	0	0		0	0	0
Total	0	0	1	1	2	0	4
%	0.0	0.0	25.0	25.0	50.0	0.0	100.0

Appendix D3. Estimated chinook salmon CPUE by date and station, Upper Cook Inlet offshore test fish project, 1997.

	Station Number						
Date	4	5	6	6.5	7	8	Total
01-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
02-Jul	0.0	0.0	0.0		0.0	0.0	0.0
03-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
04-Jul	0.0	0.0	0.0		0.0	0.0	0.0
05-Jul	0.0	0.0	0.7	0.0	0.0	0.0	0.7
06-Jul	0.0	0.0	0.0		0.0	0.0	0.0
07-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
08-Jul	0.0	0.0	0.0		0.0	0.0	0.0
09-Jul	0.0	0.0	0.0	0.0	0.8		0.8
10-Jul	0.0	0.0	0.0		0.0	0.0	0.0
11-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
12-Jul	0.0	0.0	0.0		0.0	0.0	0.0
13-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14-Jul	0.0	0.0	0.0		0.0	0.0	0.0
15-Jul	0.0	0.0	0.0	0.8	0.0	0.0	0.8
16-Jul	0.0	0.0	0.0		0.0	0.0	0.0
17-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18-Jul	0.0	0.0	0.0		0.0	0.0	0.0
19-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20-Jul	0.0	0.0	0.0		0.0	0.0	0.0
21-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22-Jul	0.0	0.0	0.0		0.0	0.0	0.0
23-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24-Jul	0.0	0.0	0.0		0.0	0.0	0.0
25-Jul	0.0	0.0	0.0	0.0	0.8	0.0	0.8
26-Jul	0.0	0.0	0.0		0.0	0.0	0.0
27-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28-Jul	0.0	0.0	0.0		0.0	0.0	0.0
29-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30-Jul	0.0	0.0	0.0		0.0	0.0	0.0
Total	0.0	0.0	0.7	0.8	1.6	0.0	3.2
%	0.0	0.0	22.9	25.5	51.6	0.0	100.0

Appendix E1. Entry pattern of sockeye salmon into Upper Cook Inlet, Alaska, 1997, estimated from daily CPUE measured at the latitude of Anchor Point

Day	Date	Input Y	Estimated Y	Residual	Change in input Y	Change in estimated Y
8	701	0.0245	0.0738	-0.0493		
9	702	0.0397	0.0857	-0.0459	0.0153	0.0119
10	703	0.0742	0.0993	-0.025	0.0345	0.0136
11	704	0.0877	0.1147	-0.0271	0.0134	0.0155
12	705	0.1054	0.1323	-0.0269	0.0177	0.0175
13	706	0.1505	0.152	-0.0015	0.0451	0.0197
14	707	0.1697	0.1741	-0.0044	0.0192	0.0221
15	708	0.185	0.1986	-0.0137	0.0152	0.0246
16	709	0.2509	0.2257	0.0251	0.0659	0.0271
17	710	0.3103	0.2553	0.055	0.0595	0.0296
18	711	0.3521	0.2873	0.0648	0.0418	0.032
19	712	0.3878	0.3216	0.0662	0.0356	0.0343
20	713	0.3921	0.358	0.0341	0.0043	0.0363
21	714	0.428	0.396	0.0319	0.0359	0.0381
22	715	0.4556	0.4354	0.0202	0.0277	0.0394
23	716	0.4739	0.4755	-0.0017	0.0183	0.0402
24	717	0.5005	0.5161	-0.0155	0.0266	0.0405
25	718	0.5058	0.5563	-0.0505	0.0053	0.0403
26	719	0.537	0.5959	-0.0589	0.0311	0.0396
27	720	0.5431	0.6343	-0.0911	0.0062	0.0384
28	721	0.6472	0.671	-0.0238	0.104	0.0367
29	722	0.6758	0.7057	-0.0299	0.0287	0.0347
30	723	0.7247	0.7383	-0.0136	0.0489	0.0325
31	724	0.7602	0.7683	-0.0082	0.0355	0.0301
32	725	0.784	0.7959	-0.0119	0.0238	0.0276
33	726	0.8366	0.821	0.0156	0.0526	0.0251
34	727	0.8791	0.8436	0.0355	0.0425	0.0226
35	728	0.8979	0.8638	0.0341	0.0188	0.0202
36	729	0.9475	0.8818	0.0657	0.0496	0.018
37	730	0.9713	0.8977	0.0736	0.0237	0.0159

file: otf97e1.xls

Appendix F. Chemical and physical observations made in Upper Cook Inlet, Alaska during the conduct of the 1997 offshore test fish project.

Date	Station	Air Temp. (c)	Water Temp. (c)	Wind Vel. (knots)	Wind Dir^	Tide Stage~	Salinity (ppt)	Water Depth (f)	Secchi (m)
01-Jul	4	13	9.3	12	6	4	31.4	25	4.5
	5	13	9.6	10	6	4	33.8	27	4.5
	6	13	9.9	12	6	4	33.8	48	4
	6.5	14	10.1	12	6	4	34	44	4.5
	7	14	10	10	6	1	34	45	4.5
	8	14	9.7	15	6	3	33.6	32	3
02-Jul	8	12	10	22	6	3	33.5	30	3
	7	13	10	24	5	3	33.6	44	3
	6	12	9.9	20	5	3	30.6	45	4
	5	12	10.5	13	5	2	29.8	35	2.5
	4	13	9.5	5	5	4	31.2	24	4.5
03-Jul	4	15	9.4	6	5	2	31.3	24	4.5
	5	15	9.8	6	5	4	30.9	39	4
	6	16	10	0	0	4	30.7	46	3
	6.5	15	10.5	0	0	4	30.5	45	3
	7	16	10.4	0	0	4	30.5	45	3
	8	14	10	5	5	4	30.6	31	3
04-Jul	8	12	9.8	12	6	1	30.7	31	3.5
	7	12	9.9	15	6	3	30.7	46	3
	6	13	9.8	20	5	3	31	45	3.5
	5	13	8.9	20	5	3	31.6	36	4.5
	4	14	9.5	10	5	3	31.8	25	5.5
05-Jul	4	15	9.8	0	0	3	31.4	24	4.5
	5	16	10.1	0	0	2	31	38.5	3.5
	6	16	10.3	0	0	2	30.5	45	3
	6.5	16	10.5	0	0	4	30.5	43	2.5
	7	16	10.4	5	6	4	30.5	45	2.5
	8	14	10.5	5	6	4	30.4	31.5	3
06-Jul	8	13	10.1	5	5	1	30.8	31	2.5
	7	13	10.5	5	5	3	30.6	45	3.5
	6	14	9.9	10	4	3	30.9	46	4
	5	15	9.6	10	4	3	31.7	40	5
	4	15	8.9	5	5	3	31.9	25	5.5
07-Jul	4	15	8.7	15	4	3	31.9	24	5.5
	5	15	10.5	20	4	3	30.5	39	3.5
	6	15	11	20	4	2	29.7	46	2.5
	6.5	15	10.9	20	5	4	29.9	44	2.5
	7	14	10.5	25	4	4	30.5	45	1.5
	8	14	11	15	4	4	29.9	29	2

-continued-

Date	Station	Air Temp. (c)	Water Temp. (c)	Wind Vel. (knots)	Wind Dir^	Tide Stage~	Salinity (ppt)	Water Depth (f)	Secchi (m)
08-Jul	8	13	10.4	0	0	4	30.5	30	3
	7	14	10.4	0	0	4	30.4	45	3
	6	13	10.6	5	5	1	30.5	46	3
	5	13	10.4	10	4	3	30.8	35	4
	4	14	9.1	8	4	3	31.8	25	5
09-Jul	4	14	9.1	27	4	3	31.8	25	4.5
	5	14	10.5	25	4	3	30.5	37	2.5
	6	14	10.5	24	4	3	30	45	3
	6.5	14	10.8	25	5	2	30.2	44	2.5
	7	14	10.8	26	5	4	30.1	44	3
10-Jul	8	13	11.1	14	5	4	30	30	2
	7	13	10.6	8	5	4	30.5	46	3
	6	13	10.7	10	6	1	30.4	47	3
	5	12	10.2	15	6	3	31.1	36	4
	4	12	8.9	12	6	3	32	25	8.5
11-Jul	4	12	9.1	22	8	1	31.6	25	5
	5	12	9.1	26	1	3	31.6	35	3.5
	6	13	10.5	26	1	3	30.4	46	2.5
	6.5	13	10.9	22	8	3	31.4	45	2
	7	13	11.2	23	8	3	30	44	2.5
	8	13	11.2	24	8	4	30	32	2.5
12-Jul	8	13	9.8	12	8	4	30.2	30	2.5
	7	13	10.3	12	8	4	30.8	46	3.5
	6	12	9.3	14	8	4	31.9	46	5
	5	12	9	5	8	4	31.5	47	5
	4	12	9.1	5	8	3	31.7	25	6
13-Jul	4	13	9.1	0	0	3	31.8	26	6
	5	14	9.8	0	0	1	31.5	38	6
	6	14	11.2	0	0	3	30.1	47	3
	6.5	14	11.5	0	0	3	29.8	44	3
	7	14	11.6	5	8	3	29.2	46	3
	8	15	11.4	0	0	3	29.7	30	3.5
14-Jul	8	13	12.2	5	4	3	28.1	29	3
	7	14	11.8	10	4	3	28.6	44	3
	6	14	10	4	4	2	30.8	46	4.5
	5	13	9.3	0	0	4	31.7	38	5
	4	14	9.3	0	0	4	31.7	25	8.5
15-Jul	4	14	9.3	0	0	4	30.7	25	7
	5	15	9.5	3	8	4	30.6	36	8
	6	14	10.1	0	0	4	31.6	46	5.5
	6.5	15	13	3	6	4	27.4	44	4

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Appendix F. (p 3 of 5)

Date	Station	Air Temp. (c)	Water Temp. (c)	Wind Vel. (knots)	Wind Dir^	Tide Stage~	Salinity (ppt)	Water Depth (f)	Secchi (m)
15-Jul	7	15	12.3	3	6	1	28.1	45	2.5
	8	15	12.5	4	5	3	27.9	31	3
16-Jul	8	14	11.8	0	0	3	29.1	28	3.5
	7	14	12.7	5	2	3	27.1	44	3.5
	6	14	10.5	8	2	2	30.8	45	4.5
	5	14	9.6	10	8	4	31.7	35	7.5
	4	14	9.5	12	1	4	31	25	6.5
17-Jul	4	13	9.3	10	8	3	31.7	23	7
	5	13	9.3	15	8	4	31.7	36	7
	6	13	9.6	22	8	4	31.6	47	5
	6.5	13	9.5	24	8	4	31.5	44	5
	7	14	10.9	22	1	4	30	44	3.5
	8	14	11.5	22	2	1	29	32	2.5
18-Jul	8	13	11.8	12	1	3	29	30	3
	7	13	7.3	12	8	3	29.1	45	3
	6	13	11.3	10	8	3	29.2	46	4
	5	13	9.4	15	8	3	31.8	35	7
	4	13	9.4	12	8	2	31.8	23	8
19-Jul	4	13	9.4	0	0	3	31.8	24	6
	5	14	9.3	0	0	2	31.5	37	6.5
	6	14	9.7	0	0	4	31.2	45	4.5
	6.5	14	10.1	0	0	4	30.9	43	3.5
	7	15	10.5	0	0	4	30.5	46	3.5
	8	14	11.5	0	0	4	29.5	29	2.5
20-Jul	8	13	11.1	0	0	1	29.7	33	2.5
	7	13	11	0	0	3	29.8	49	3.5
	6	13	10.9	2	4	3	29.9	46	3.5
	5	13	9.5	0	0	3	31.8	36	7
	4	13	9.7	0	0	3	31.4	23	6
21-Jul	4	13	9.7	12	4	3	31.7	23	5.5
	5	15	9.7	12	4	3	31.5	34	6
	6	15	10.2	15	4	12	30.9	47	2.5
	6.5	15	10.2	8	4	4	31	47	4
	7	15	10.5	13	8	4	30.9	43	2.5
	8	15	11.6	12	6	4	30	30	2
22-Jul	8	12	10.7	20	4	4	30.4	31	2
	7	12	10.5	20	4	1	30.5	46	2
	6	12	10.2	22	4	3	31	47	4
	5	12	9.8	20	4	3	31.5	37	4
	4	13	9.4	18	4	3	31.8	25	5
23-Jul	4	13	9.6	7	4	3	31.7	24	6

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Appendix F. (p 4 of 5)

Date	Station	Air Temp. (c)	Water Temp. (c)	Wind Vel. (knots)	Wind Dir^	Tide Stage~	Salinity (ppt)	Water Depth (f)	Secchi (m)
23-Jul	5	14	9.6	3	4	3	32	34	6
	6	15	11.3	5	6	3	33	45	3
	6.5	16	10.9	0	0	2	3.5	43	1.5
	7	16	11.3	0	0	4	30.3	45	2
	8	16	11.5	0	0	4	29.9	29	1.5
24-Jul	8	13	10.9	5	5	4	30.4	28	2.5
	7	13	10.8	0	0	4	30.7	44	2.5
	6	13	9.9	12	4	1	31.4	40	4.5
	5	13	9.7	12	4	3	31.6	37	5
	4	14	9.8	15	4	3	31.9	25	7
25-Jul	4	13	9.7	8	4	3	31.9	25	10
	5	13	10.2	5	4	3	31.6	35	6
	6	14	11.2	15	4	3	30.1	45	3
	6.5	15	11.4	12	4	3	30.4	44	2.5
	7	16	11.7	5	4	3	30.2	43	2.5
	8	16	11.4	0	0	2	30.1	30	2
26-Jul	8	12	11.5	15	4	4	30	28	1.5
	7	13	11.4	5	4	4	30.1	47	2.5
	6	13	10.8	8	4	4	30.8	46	3.5
	5	14	10.6	5	4	1	31.2	37	5.5
	4	14	9.9	8	4	3	31.8	26	7.5
27-Jul	4	16	10	0	0	4	31.8	27	6.5
	5	17	9.8	0	0	4	31.6	40	6
	6	17	10.5	0	0	1	31.8	47	5
	6.5	17	12.2	5	4	3	30.1	42	4
	7	17	12.1	5	4	3	30	43	3.5
	8	17	12.4	5	4	3	31	28	4
28-Jul	8	13	11.6	8	4	3	30.1	28	2.5
	7	13	12.3	10	4	2	29.2	44	2.5
	6	14	11.6	10	4	4	30.1	46	4
	5	15	10.5	10	4	4	31.4	39	6.5
	4	15	10	12	4	4	31.8	26	9
29-Jul	4	13	10.4	20	7	4	31.6	23	5.5
	5	13	11	22	6	4	31	37	6
	6	13	11.9	23	6	4	30.1	49	4
	6.5	14	12.8	25	6	4	28.7	43	2.5
	7	14	12.5	22	6	1	29.2	44	3
	8	14	12	22	6	3	29.7	30	2
30-Jul	8	13	11.6	19	6	3	30.1	30	2.5
	7	13	12	18	6	3	29.7	42	3
	6	14	12.5	15	6	3	29	45	3

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Appendix F. (p 5 of 5)

Date	Station	Air Temp. (c)	Water Temp. (c)	Wind Vel. (knots)	Wind Dir^	Tide Stage~	Salinity (ppt)	Water Depth (f)	Secchi (m)
30-Jul	5	14	12.8	10	6	2	28.1	38	4
	4	15	10.9	6	6	-1	31.1	24	5.5

^ Wind direction code 1=north,2=northeast,3=east,4=southeast,
5=south,6=southwest,7=west,8=northwest

~ Tide stage code 1=high,2=low,3=ebb,4=flood

Appendix G.1. Total run estimates for sockeye salmon, Upper Cook Inlet, 1997. RUNEST.XLS

Total Run Estimate Based on Offshore Test Fishing Information

Assume 15 July is mean 50% point of run across transect (On Time)

Fit of 1997 data to 1979-1996 data

You need to enter data only in cells with light gray shading.

You can sort the following list by MSS to rank estimates in order of best fit

		Estimated Total CPUE				
Year	MSS	Current	Previous Day	Difference	Timing	
1979	0.00304	735	691	44	Early 5 days	
1980	0.01382	470	428	42	Early 9 days	
1981	0.01090	478	439	39	Early 9 days	
1982	0.00087	1,467	1,375	92	Late 2 days	
1983	0.00038	1,655	1,592	63	On Time	
1984	0.00207	855	807	48	Early 4 days	
1985	0.00135	1,212	1,132	80	On Time	
1986	0.00083	1,401	1,321	80	Late 1 day	
1987	0.00028	2,185	2,084	101	Late 2 days	
1988	0.00182	1,004	941	63	Early 2 days	
1989	0.00405	868	792	76	On Time	
1990	0.00002	4,312	4,320	(8)	Late 3 days	
1991	0.00020	2,170	2,098	72	Late 2 days	
1992	0.00005	3,179	3,169	10	Late 2 days	
1993	0.00058	1,368	1,313	55	Early 1 day	
1994	0.00041	2,001	1,888	113	Late 4 days	
1995	0.00019	1,841	1,806	35	On Time	
1996	0.00025	1,496	1,474	22		

TOTAL RUN THROUGH			7-Jul	836,458		
Escapement					235,040	
	Above Sonar					204,383
	Below Sonar					0
	Unassessed (15% of total assessed)					30,657
Cumulative Catch					479,683	
	Daily Drift					110,011
	Daily Set					27,641
Residual in District					121,735	
	Drift (40% expploitation, if full district; 25%, if reduced district)					109,735
	Set (70% exploitation)					12,000
1997 cumulative cpue		0	through	15-Jul		
1997 cumulative cpue		289	through	7-Jul		

Offshore Test Fishing Total Run Estimates for 1997

Passage Rate (Total Run/Cumulative CPUE)					2,894	Based on	7-Jul	harvest
Total cpue for season, if 15 July is 50% point:								
Run Estimate Based on Average Timing (15 July 50% Point								
	Run Remaining		(836,458)					
Run Estimates Based on Model Results (Fit of Current Year to Past Years)								
		Estimated Total CPUE			Estimated		Run	
Year	MSS	Current	Previous Day	Difference	Total Run	Timing	Remaining	
1979	0.00304	735	691	44	2,127,324	Early 5 days	1,290,866	
1980	0.01382	470	428	42	1,360,330	Early 9 days	523,872	
1981	0.01090	478	439	39	1,383,484	Early 9 days	547,026	
1982	0.00087	1,467	1,375	92	4,245,965	Late 2 days	3,409,507	
1983	0.00038	1,655	1,592	63	4,790,097	On Time	3,953,639	
1984	0.00207	855	807	48	2,474,642	Early 4 days	1,638,184	
1985	0.00135	1,212	1,132	80	3,507,914	On Time	2,671,456	
1986	0.00083	1,401	1,321	80	4,054,940	Late 1 day	3,218,482	
1987	0.00028	2,185	2,084	101	6,324,086	Late 2 days	5,487,628	
1988	0.00182	1,004	941	63	2,905,896	Early 2 days	2,069,438	
1989	0.00405	868	792	76	2,512,268	On Time	1,675,810	
1990	0.00002	4,312	4,320	(8)	12,480,301	Late 3 days	##########	
1991	0.00020	2,170	2,098	72	6,280,671	Late 2 days	5,444,213	
1992	0.00005	3,179	3,169	10	9,201,038	Late 2 days	8,364,580	
1993	0.00058	1,368	1,313	55	3,959,427	Early 1 day	3,122,969	
1994	0.00041	2,001	1,888	113	5,791,531	Late 4 days	4,955,073	
1995	0.00019	1,841	1,806	35	5,328,440	On Time	4,491,982	
1996	0.00025	1,496	1,474	22	4,329,900		3,493,442	

Total Run Estimate Based on Offshore Test Fishing Information

Assume 15 July is mean 50% point of run across transect (On Time)

Fit of 1997 data to 1979-1996 data

You need to enter data only in cells with light gray shading.

You can sort the following list by MSS to rank estimates in order of best fit

		Estimated Total CPUE			
Year	MSS	Current	Previous Day	Difference	Timing
1979	0.00556	960	899	61	Early 5 days
1980	0.02441	700	635	64	Early 9 days
1981	0.02060	691	631	60	Early 9 days
1982	0.00132	1,876	1,775	101	Late 2 days
1983	0.00052	1,908	1,849	59	On Time
1984	0.00363	1,089	1,027	62	Early 4 days
1985	0.00212	1,579	1,486	93	On Time
1986	0.00126	1,750	1,664	86	Late 1 day
1987	0.00037	2,587	2,496	91	Late 2 days
1988	0.00299	1,304	1,226	78	Early 2 days
1989	0.00647	1,244	1,144	100	On Time
1990	0.00003	4,121	4,194	(73)	Late 3 days
1991	0.00025	2,435	2,379	56	Late 2 days
1992	0.00004	3,128	3,157	(28)	Late 2 days
1993	0.00085	1,604	1,547	58	Early 1 day
1994	0.00059	2,475	2,363	112	Late 4 days
1995	0.00022	1,969	1,942	27	On Time
1996	0.00030	1,591	1,568	23	

TOTAL RUN THROUGH			11-Jul	1,847,943	
Escapement				364,558	
	Above Sonar				317,007
	Below Sonar				0
	Unassessed (15% of total assessed)				47,551
Cumulative Catch				1,066,268	
	Daily Drift				125,109
	Daily Set				97,511
Residual in District				417,117	
	Drift (40% exploitation, if full district; 25%, if reduced district)				375,327
	Set (70% exploitation)				41,790
1997 cumulative cpue		0	through	15-Jul	
1997 cumulative cpue		600	through	11-Jul	

Offshore Test Fishing Total Run Estimates for 1997

Passage Rate (Total Run/Cumulative CPUE)					3,078	Based on	11-Jul	harvest
Total cpue for season, if 15 July is 50% point:								
Run Estimate Based on Average Timing (15 July 50% Point								
	Run Remaining		(1,847,943)					
Run Estimates Based on Model Results (Fit of Current Year to Past Years)								
		Estimated Total CPUE			Estimated		Run	
Year	MSS	Current	Previous Day	Difference	Total Run	Timing	Remaining	
1979	0.00556	960	899	61	2,955,188	Early 5 days	1,107,245	
1980	0.02441	700	635	64	2,153,789	Early 9 days	305,846	
1981	0.02060	691	631	60	2,125,532	Early 9 days	277,589	
1982	0.00132	1,876	1,775	101	5,774,229	Late 2 days	3,926,286	
1983	0.00052	1,908	1,849	59	5,874,270	On Time	4,026,327	
1984	0.00363	1,089	1,027	62	3,352,733	Early 4 days	1,504,790	
1985	0.00212	1,579	1,486	93	4,860,293	On Time	3,012,350	
1986	0.00126	1,750	1,664	86	5,386,781	Late 1 day	3,538,838	
1987	0.00037	2,587	2,496	91	7,963,202	Late 2 days	6,115,259	
1988	0.00299	1,304	1,226	78	4,012,629	Early 2 days	2,164,686	
1989	0.00647	1,244	1,144	100	3,828,739	On Time	1,980,796	
1990	0.00003	4,121	4,194	(73)	12,684,669	Late 3 days	##########	
1991	0.00025	2,435	2,379	56	7,495,321	Late 2 days	5,647,378	
1992	0.00004	3,128	3,157	(28)	9,629,626	Late 2 days	7,781,683	
1993	0.00085	1,604	1,547	58	4,937,985	Early 1 day	3,090,042	
1994	0.00059	2,475	2,363	112	7,618,448	Late 4 days	5,770,505	
1995	0.00022	1,969	1,942	27	6,059,606	On Time	4,211,663	
1996	0.00030	1,591	1,568	23	4,897,354		3,049,411	

Total Run Estimate Based on Offshore Test Fishing Information

Assume 15 July is mean 50% point of run across transect (On Time)
Fit of 1997 data to 1979-1996 data

You need to enter data only in cells with light gray shading.
You can sort the following list by MSS to rank estimates in order of best fit

		Estimated Total CPUE				
Year	MSS	Current	Previous Day	Difference	Timing	
1979	0.00523	1,033	1,018	15	Early 5 days	
1980	0.02504	812	782	30	Early 9 days	
1981	0.02146	793	766	27	Early 9 days	
1982	0.00113	1,933	1,937	(4)	Late 2 days	
1983	0.00054	1,857	1,893	(36)	On Time	
1984	0.00326	1,149	1,140	9	Early 4 days	
1985	0.00184	1,653	1,648	5	On Time	
1986	0.00107	1,785	1,794	(9)	Late 1 day	
1987	0.00037	2,525	2,576	(51)	Late 2 days	
1988	0.00264	1,374	1,365	9	Early 2 days	
1989	0.00608	1,382	1,352	30	On Time	
1990	0.00042	3,489	3,725	(236)	Late 3 days	
1991	0.00036	2,310	2,376	(66)	Late 2 days	
1992	0.00050	2,726	2,881	(155)	Late 2 days	
1993	0.00078	1,589	1,610	(21)	Early 1 day	
1994	0.00051	2,482	2,511	(29)	Late 4 days	
1995	0.00051	1,839	1,898	(59)	On Time	
1996	0.00060	1,505	1,544	(39)		

TOTAL RUN THROUGH			14-Jul	2,964,650	
Escapement				663,943	
	Above Sonar				533,864
	Below Sonar				50,000
	Unassessed (15% of total assessed)				80,079
Cumulative Catch				1,841,684	
	Daily Drift				276,826
	Daily Set				102,164
Residual in District				459,023	
	Drift (40% expploitation, if full district; 25%, if reduced district)				415,239
	Set (70% exploitation)				43,784
1997 cumulative cpue		0 through	15-Jul		
1997 cumulative cpue		1,032 through	14-Jul		

Offshore Test Fishing Total Run Estimates for 1997

Passage Rate (Total Run/Cumulative CPUE)					2,873	Based on	14-Jul	harvest
Total cpue for season, if 15 July is 50% point:								
Run Estimate Based on Average Timing (15 July 50% Point								
	Run Remaining		(2,964,650)					
Run Estimates Based on Model Results (Fit of Current Year to Past Years)								
		Estimated Total CPUE			Estimated		Run	
Year	MSS	Current	Previous Day	Difference	Total Run	Timing	Remaining	
1979	0.00523	1,033	1,018	15	2,967,178	Early 5 days	2,528	
1980	0.02504	812	782	30	2,332,651	Early 9 days	(631,999)	
1981	0.02146	793	766	27	2,278,586	Early 9 days	(686,064)	
1982	0.00113	1,933	1,937	(4)	5,552,973	Late 2 days	2,588,323	
1983	0.00054	1,857	1,893	(36)	5,335,623	On Time	2,370,973	
1984	0.00326	1,149	1,140	9	3,300,759	Early 4 days	336,109	
1985	0.00184	1,653	1,648	5	4,748,611	On Time	1,783,961	
1986	0.00107	1,785	1,794	(9)	5,127,810	Late 1 day	2,163,160	
1987	0.00037	2,525	2,576	(51)	7,253,625	Late 2 days	4,288,975	
1988	0.00264	1,374	1,365	9	3,945,685	Early 2 days	981,035	
1989	0.00608	1,382	1,352	30	3,970,103	On Time	1,005,453	
1990	0.00042	3,489	3,725	(236)	10,022,930	Late 3 days	7,058,280	
1991	0.00036	2,310	2,376	(66)	6,635,990	Late 2 days	3,671,340	
1992	0.00050	2,726	2,881	(155)	7,831,043	Late 2 days	4,866,393	
1993	0.00078	1,589	1,610	(21)	4,564,757	Early 1 day	1,600,107	
1994	0.00051	2,482	2,511	(29)	7,130,385	Late 4 days	4,165,735	
1995	0.00051	1,839	1,898	(59)	5,282,937	On Time	2,318,287	
1996	0.00060	1,505	1,544	(39)	4,323,448		1,358,798	

Total Run Estimate Based on Offshore Test Fishing Information

Assume 15 July is mean 50% point of run across transect (On Time)
Fit of 1997 data to 1979-1996 data

You need to enter data only in cells with light gray shading.
You can sort the following list by MSS to rank estimates in order of best fit

		Estimated Total CPUE				
Year	MSS	Current	Previous Day	Difference	Timing	
1979	0.00425	1,059	1,058	1	Early 5 days	
1980	0.02323	897	882	15	Early 9 days	
1981	0.02032	872	858	14	Early 9 days	
1982	0.00124	1,828	1,866	(38)	Late 2 days	
1983	0.00159	1,673	1,724	(51)	On Time	
1984	0.00258	1,151	1,156	(5)	Early 4 days	
1985	0.00164	1,601	1,624	(24)	On Time	
1986	0.00131	1,680	1,715	(35)	Late 1 day	
1987	0.00121	2,234	2,317	(83)	Late 2 days	
1988	0.00216	1,353	1,366	(13)	Early 2 days	
1989	0.00490	1,427	1,427	(0)	On Time	
1990	0.00313	2,635	2,829	(193)	Late 3 days	
1991	0.00176	2,001	2,082	(81)	Late 2 days	
1992	0.00336	2,160	2,290	(130)	Late 2 days	
1993	0.00146	1,473	1,506	(33)	Early 1 day	
1994	0.00099	2,258	2,327	(69)	Late 4 days	
1995	0.00241	1,605	1,662	(58)	On Time	
1996	0.00214	1,356	1,392	(36)		

TOTAL RUN THROUGH			18-Jul	3,728,446	
Escapement				1,060,593	
	Above Sonar				878,777
	Below Sonar				50,000
	Unassessed (15% of total assessed)				131,816
Cumulative Catch				2,217,001	
	Daily Drift				105,986
	Daily Set				62,787
Residual in District				450,852	
	Drift (40% expploitation, if full district; 25%, if reduced district)				423,944
	Set (70% exploitation)				26,908
1997 cumulative cpue		776	through	15-Jul	
1997 cumulative cpue		1,059	through	7-Jul	

Offshore Test Fishing Total Run Estimates for 1997

Passage Rate (Total Run/Cumulative CPUE)					3,521	Based on	18-Jul	harvest
Total cpue for season, if 15 July is 50% point:				1,552				
Run Estimate Based on Average Timing (15 July 50% Point					5,464,163			
	Run Remaining		1,735,717					
Run Estimates Based on Model Results (Fit of Current Year to Past Years)								
		Estimated Total CPUE			Estimated		Run	
Year	MSS	Current	Previous Day	Difference	Total Run	Timing	Remaining	
1979	0.00425	1,059	1,058	1	3,728,446	Early 5 days	0	
1980	0.02323	897	882	15	3,156,857	Early 9 days	(571,589)	
1981	0.02032	872	858	14	3,070,071	Early 9 days	(658,375)	
1982	0.00124	1,828	1,866	(38)	6,435,882	Late 2 days	2,707,436	
1983	0.00159	1,673	1,724	(51)	5,890,170	On Time	2,161,724	
1984	0.00258	1,151	1,156	(5)	4,052,353	Early 4 days	323,907	
1985	0.00164	1,601	1,624	(24)	5,636,326	On Time	1,907,880	
1986	0.00131	1,680	1,715	(35)	5,914,815	Late 1 day	2,186,369	
1987	0.00121	2,234	2,317	(83)	7,865,296	Late 2 days	4,136,850	
1988	0.00216	1,353	1,366	(13)	4,763,539	Early 2 days	1,035,093	
1989	0.00490	1,427	1,427	(0)	5,022,382	On Time	1,293,936	
1990	0.00313	2,635	2,829	(193)	9,278,444	Late 3 days	5,549,998	
1991	0.00176	2,001	2,082	(81)	7,046,411	Late 2 days	3,317,965	
1992	0.00336	2,160	2,290	(130)	7,604,762	Late 2 days	3,876,316	
1993	0.00146	1,473	1,506	(33)	5,186,025	Early 1 day	1,457,579	
1994	0.00099	2,258	2,327	(69)	7,949,793	Late 4 days	4,221,347	
1995	0.00241	1,605	1,662	(58)	5,649,705	On Time	1,921,259	
1996	0.00214	1,356	1,392	(36)	4,773,819		1,045,373	

Total Run Estimate Based on Offshore Test Fishing Information

Assume 15 July is mean 50% point of run across transect (On Time)
Fit of 1997 data to 1979-1996 data

You need to enter data only in cells with light gray shading.
You can sort the following list by MSS to rank estimates in order of best fit

		Estimated Total CPUE				
Year	MSS	Current	Previous Day	Difference	Timing	
1979	0.00464	1,089	1,065	24	Early 5 days	
1980	0.02441	960	927	33	Early 9 days	
1981	0.02227	934	901	33	Early 9 days	
1982	0.00159	1,753	1,758	(5)	Late 2 days	
1983	0.00252	1,576	1,588	(12)	On Time	
1984	0.00272	1,165	1,145	20	Early 4 days	
1985	0.00174	1,563	1,558	5	On Time	
1986	0.00171	1,614	1,617	(3)	Late 1 day	
1987	0.00230	2,048	2,086	(38)	Late 2 days	
1988	0.00214	1,345	1,331	14	Early 2 days	
1989	0.00449	1,447	1,424	23	On Time	
1990	0.00657	2,209	2,315	(106)	Late 3 days	
1991	0.00323	1,828	1,862	(34)	Late 2 days	
1992	0.00627	1,884	1,947	(63)	Late 2 days	
1993	0.00199	1,417	1,417	(0)	Early 1 day	
1994	0.00172	2,099	2,129	(30)	Late 4 days	
1995	0.00372	1,497	1,512	(15)	On Time	
1996	0.00286	1,301	1,301	0		

TOTAL RUN THROUGH		21-Jul	4,073,659		
Escapement				1,060,593	
	Above Sonar				878,777
	Below Sonar				50,000
	Unassessed (15% of total assessed)				131,816
Cumulative Catch				2,846,543	
	Daily Drift				51,559
	Daily Set				27,641
Residual in District				166,523	
	Drift (40% expploitation, if full district; 25%, if reduced district)				154,677
	Set (70% exploitation)				11,846
1997 cumulative cpue	776	through	15-Jul		
1997 cumulative cpue	1,089	through	21-Jul		

Offshore Test Fishing Total Run Estimates for 1997

Passage Rate (Total Run/Cumulative CPUE)					3,741	Based on	21-Jul	harvest
Total cpue for season, if 15 July is 50% point:				1,552				
Run Estimate Based on Average Timing (15 July 50% Point					5,805,619			
	Run Remaining		1,731,960					
Run Estimates Based on Model Results (Fit of Current Year to Past Years)								
		Estimated Total CPUE			Estimated		Run	
Year	MSS	Current	Previous Day	Difference	Total Run	Timing	Remaining	
1979	0.00464	1,089	1,065	24	4,073,659	Early 5 days	0	
1980	0.02441	960	927	33	3,590,880	Early 9 days	(482,779)	
1981	0.02227	934	901	33	3,494,332	Early 9 days	(579,327)	
1982	0.00159	1,753	1,758	(5)	6,556,347	Late 2 days	2,482,688	
1983	0.00252	1,576	1,588	(12)	5,894,873	On Time	1,821,214	
1984	0.00272	1,165	1,145	20	4,356,833	Early 4 days	283,174	
1985	0.00174	1,563	1,558	5	5,846,767	On Time	1,773,108	
1986	0.00171	1,614	1,617	(3)	6,035,898	Late 1 day	1,962,239	
1987	0.00230	2,048	2,086	(38)	7,660,985	Late 2 days	3,587,326	
1988	0.00214	1,345	1,331	14	5,031,287	Early 2 days	957,628	
1989	0.00449	1,447	1,424	23	5,411,271	On Time	1,337,612	
1990	0.00657	2,209	2,315	(106)	8,263,281	Late 3 days	4,189,622	
1991	0.00323	1,828	1,862	(34)	6,836,415	Late 2 days	2,762,756	
1992	0.00627	1,884	1,947	(63)	7,046,532	Late 2 days	2,972,873	
1993	0.00199	1,417	1,417	(0)	5,301,742	Early 1 day	1,228,083	
1994	0.00172	2,099	2,129	(30)	7,851,800	Late 4 days	3,778,141	
1995	0.00372	1,497	1,512	(15)	5,598,008	On Time	1,524,349	
1996	0.00286	1,301	1,301	0	4,866,695		793,036	